



## AIR COOLED SPLIT-SYSTEM AIR CONDITIONERS

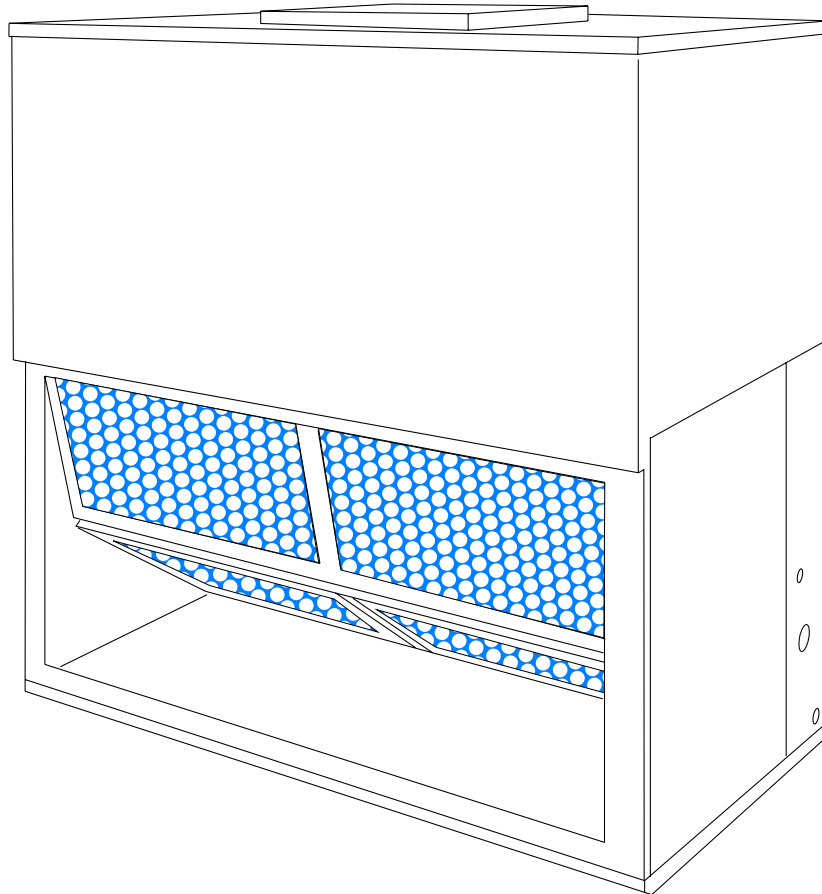
### INSTALLATION INSTRUCTION

Supersedes: 550.23-N2Y (589)

550.23-N2Y (399)

035-16672

### MODELS K2EU060A, K4EU090A, & K3EU120A



#### GENERAL

These completely assembled 5, 7-1/2 and 10 ton blower units include a well insulated cabinet, a DX cooling coil with copper tubes and aluminum fins, an expansion valve, a distributor, throwaway filters, a centrifugal blower, a blower motor contactor and a small holding charge of refrigerant-22. Blower motors and adjustable drives are factory-installed on all units.

The units are shipped in the vertical position ready for field installation. For horizontal installation, reverse the solid bottom panel and the return air duct flange on the front of the unit.

#### INSPECTION

As soon as a unit is received, it should be inspected for possible damage during transit. If damage is evident, the

extent of the damage should be noted on the carrier's freight bill. A separate request for inspection by carrier's agent should be made in writing.

#### RENEWAL PARTS

Refer to Parts Manual for complete listing of replacement parts on this equipment for complete listing of replacement parts. The forms referenced in this instruction may be ordered from:

**Publications Distribution Center  
Unitary Products Group  
P.O. Box 1592, York, PA. 17405**

This instruction covers the installation and operation of evaporator blower units. For information on the operation of the matching condensing unit, refer to Forms 550.46-N1Y, 550.46-N2Y, 550.38-N1Y, 550.38-N6Y and 550.23-N1Y.

Installer should pay particular attention to the words: **NOTE**, **CAUTION** and **WARNING**. **Notes** are intended to clarify or make the installation easier. **Cautions** are given to prevent equipment damage. **Warnings** are given to alert installer that personal injury and / or equipment damage may result if installation procedure is not handled properly.

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## INSTALLATION

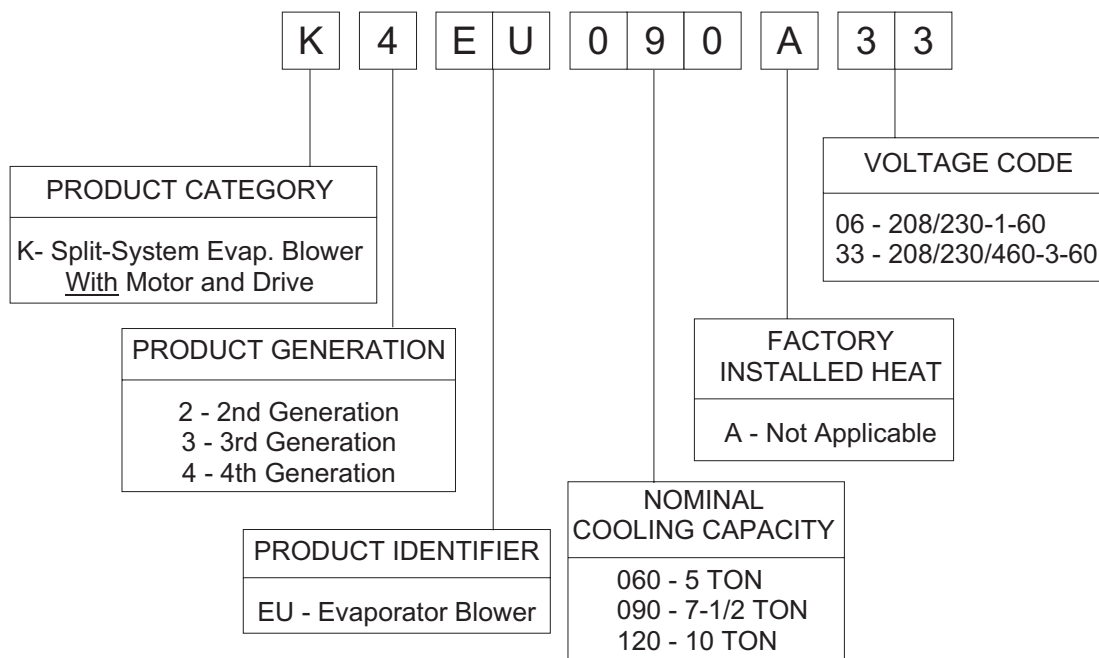
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# INSTALLATION

## LIMITATIONS

This unit must be installed in accordance with all national and local safety codes. If no local codes apply, installation must conform to the appropriate national code. The unit is designed to meet National Safety Code Standards. If components are to be added to a unit to meet local codes, they are to be installed at the dealer's and/or the customer's expense. See Table 1 for application limitations.

## LOCATION

These Evaporator Blowers are not designed for outdoor installation. They must be located within the building structure, either inside or outside the conditioned space.

These Evaporator Blower sections allow for vertical or horizontal installation in any area offering proper electrical supply, duct and drain connections.

They may be installed either with ductwork or matching plenum and inlet grille.

The units should be located as close to the condensing units as practical and positioned to minimize bends in the refrigerant piping.

Units being installed vertically or horizontally can be set directly on a floor or platform, or metal or wooden beams can support them.

Units being installed horizontally can be suspended from above. Four 3/8" weld nuts are provided in the unit frame to accommodate hanger rods. Knockouts must be removed from the unit panels to expose these weld nuts. Refer to Figure 1 for their location and the individual load on each hanger rod.

**WARNING:** Be careful when attaching the hanger rods. They must not be allowed to turn or slip.

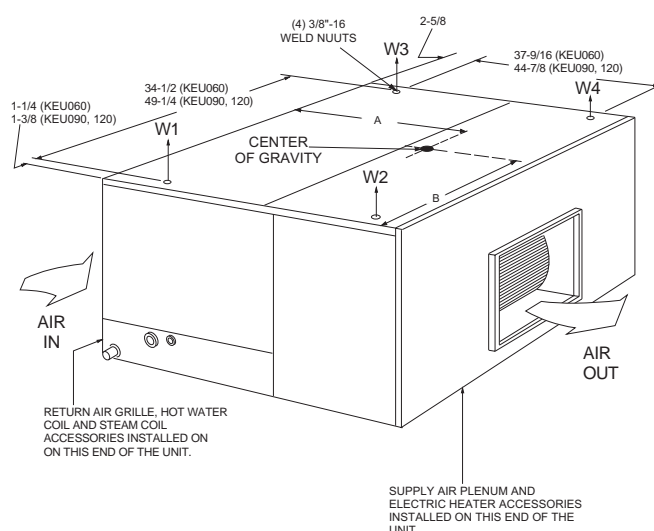
## CLEARANCES

Refer to the unit dimension details, Figures 12 and 13 for clearances required for servicing and for proper unit operation.

**TABLE 1 - UNIT APPLICATION DATA**

Model	Power Supply	Voltage Variation*		Supply Air CFM		Entering Air Temperatures, °F			
		Min.	Max.	Min.	Max.	Cooling Coil - db/wb		Heating Coil - db	
						Min.	Max.	Min.	Max.
K2EU060A06	208/230-1-60	187	252	1600	2400	65/57	95/72	40	77
K4EU090A33	208/230-3-60 460-3-60	187 432	252 504	2400	3600	65/57	95/72	40	77
K3EU120A33	208/230-3-60 460-3-60	187 432	252 504	3200	4800	65/57	95/72	40	77

\* Utilization Range "A" in accordance with ARI Standard 110



Model	Center of Gravity Dimensions (in.)		Weight Distribution (Lbs.)				
	A	B	W1	W2	W3	W4	TOTAL
KEU060	22-3/8	15-1/4	60	65	40	45	210
KEU090	26-1/4	23-3/4	85	93	70	77	325
KEU120	26-5/8	24-1/8	85	95	70	80	330

**FIG. 1 - UNIT SUSPENSION MOUNTING (Horizontal Application)**

## RIGGING AND HANDLING

Be careful when moving the unit. Do not remove any packaging until the unit is near its final location.

The packaging consists of a bottom wooden skid that can be lifted with a fork truck from any direction, a corrugated container that covers the entire unit, and strapping that secures the container to the skid.

These units can be rigged with slings under the bottom skid

**CAUTION:** *Spreader bars should be used to prevent the slings from crushing the unit panels and frame.*

Before rigging any unit, determine its weight from Table 2. Before rigging a unit for horizontal installation, determine its center of gravity from Figure 1, and make sure that its weight will be distributed equally.

## VERTICAL/HORIZONTAL INSTALLATION

These evaporator blowers are shipped for vertical installation with vertical air discharge as shown in Figure 2(A) but may be converted for horizontal installation as shown in Figure 2(B) by interchanging the solid bottom panel and the return air duct flange.

## DUCT CONNECTIONS

Design and install all ducts in accordance with all national and/or local codes.

Refer to Figure 3 for suggested method of connecting supply air ductwork.

Ducts should be sized no smaller than the duct flanges on the unit or the electric heater (if used). Refer to the unit dimension details (Figure 12 and 13) and the heater detail (Figure 4) for these sizes. Refer to Form 550.12-N10.1U for installation instructions on the electric heater.

Use flexible fiber glass or plastic cloth collars or other non-flammable material at the unit duct connections to minimize the transmission of noise and vibration.

Insulate all ductwork running through unconditioned areas to prevent moisture condensation and to provide more economical operation.

The return air duct flange is factory-mounted on the front of the unit, but it can be reversed with the solid bottom panel for horizontal applications. When the return air grille is used, the duct connection frame is not used.

**NOTE:** *If return air duct is not used, applicable installation codes may limit the unit to installation only in a single story residence.*

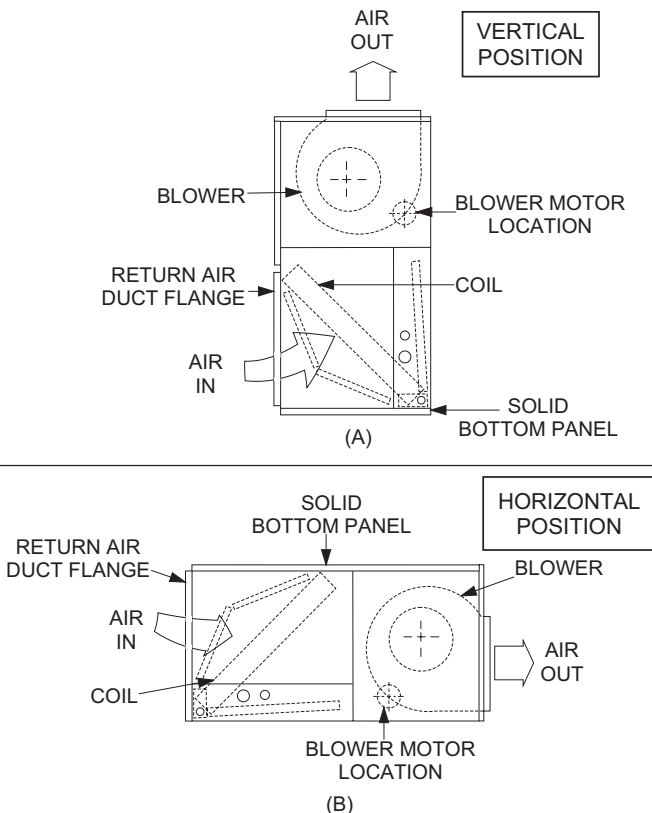
A supply air plenum (Figure 5), a base (Figure 6), and a return air grille (Figure 7) are available as field-installed accessories, and one of the following respective instruction forms will be packed with each.

- 550.13-N10.2U - Supply Air Plenum
- 550.13-N10.3U - Return Air Grille
- 550.12-N10.4U - Base

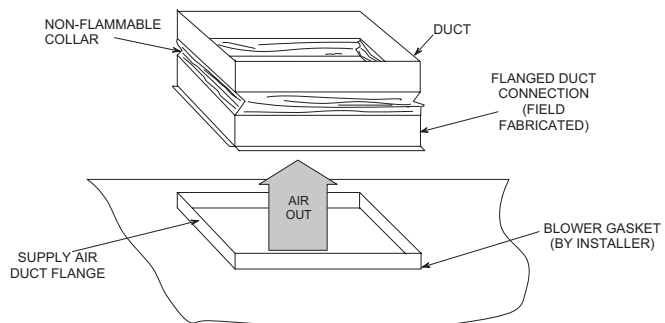
The supply air plenum and the return air grille should be used in lieu of ductwork only when a free blow/free return application is practical.

## REFRIGERANT MAINS

Many service problems can be avoided by taking adequate precautions to provide an internally clean and dry system and by using procedures and materials that conform with established standards.



**FIG. 2 - VERTICAL AND HORIZONTAL APPLICATION**



**FIG. 3 - SUPPLY AIR DUCT CONNECTION**

**TABLE 2 - PHYSICAL DATA**

DESCRIPTION			UNIT MODEL		
			060	090	120
EVAPORATOR COIL	Rows Deep x Rows Wide		3 x 24	3 x 27	3 x 32
	Finned Length - inches		30	46	46
	Face Area - square feet		5.0	8.6	10.2
	Tube OD - inches		3/8	3/8	3/8
	Fins per inch		13	13	13
CENTRIFUGAL BLOWER (Forward Curve)	Diameter x Width - inches		10 x 10	15 x 15	15 x 15
MOTORS <sup>1</sup>	Nominal HP Rating		3/4	1-1/2	2
FILTERS (Throwaway)	Quantity Per Unit	16" x 25" x 1"	2	4	4
	Face Area - square feet		5.6	11.1	11.1
DISTRIBUTOR	One Per Unit		4-3-6-1 <sup>2</sup>	5-3-10-1 <sup>2</sup>	5-3-12-1 <sup>2</sup>
OPERATING Weight, Lbs. <sup>3</sup>	Basic Unit		210	325	330
	Accessories				
	Supply Air Plenum		90	102	102
	Return Air Grille		12	15	15
	Hot Water Coil		56	82	82
	Steam Coil		57	85	85
	Base		45	60	60
	Electric Heat:	10 KW	60	63	63
		16 KW	64	66	66
		26 KW	68	71	71
		36 KW	-	74	74
HOT WATER COIL	Tubes OD, inches		1/2 (Copper)		
	Rows Deep		2		
	Fins Per Inch		12 (Aluminum)		
	Face Area, square feet		3.6	6.8	6.8
	Connections (Supply & Return)		1" NPTE		
STEAM COIL	Outer Tube OD, inches		1 (Brass)		
	Rows Deep		1		
	Fins Per Inch		8 (Aluminum)		
	Face Area - square feet		3.7	6.6	6.6
	Connection				
ELECTRIC HEAT	Heater Elements	% Nickel	59.2		
		%Chromium	16.0		
		Watt Density, watts/sq. in.	59.0		
		Face Area, square feet	3.0		
	SHIPPING VOLUME - Cubic Feet (Basic Unit)		30	53	53

<sup>1</sup>Refer to Blower Motor and Drive Data for additional blower motor and drive information.

<sup>2</sup>The first digit refers to inlet diameter (1/8"), second digit refers to tube diameter (1/16") and the third digit refers to number of tubes and the fourth digit refers to number of distributors.

<sup>3</sup>Refer to the unit installation instruction for the distributed weight of the evaporator blower unit:  
Form 550.23-N1Y (060, 090 and 120)

Hard drawn copper tubing should be used where no appreciable amount of bending around pipes or other obstructions is necessary. Use long radius ells wherever possible with one exception. Use short radius ells for traps in all vertical suction risers. If soft copper must be used, avoid sharp bends, which may cause a restriction.

Fiberglass insulation and a sealing material such as permagum should be packed around refrigerant lines where they penetrate a wall to reduce vibration and to retain some flexibility.

Support all refrigerant lines at minimum intervals with suitable hangers, brackets or clamps. Braze all copper-to-copper joints with Sil-Fos 5 or equivalent brazing material. Do not use soft solder.

Never braze or solder the liquid and suction lines together.

The complete suction line should be insulated with no less than 1/2" ARMAFLEX or equivalent. If the liquid and suction lines are to be taped together for support purposes, they must be completely insulated from one another.

### INSTALLING REFRIGERANT MAINS

The units are evacuated and dehydrated at the factory and shipped with a holding charge of Refrigerant-22. The suction and liquid connections are sealed with copper discs. Refer to the appropriate condensing unit installation instructions for charging data.

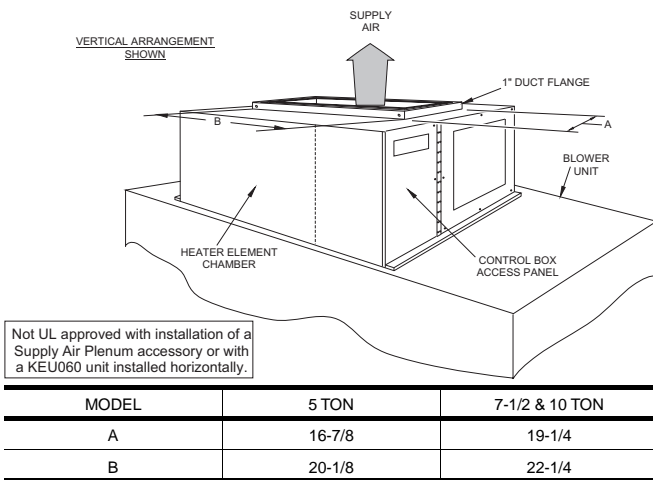


FIG. 4 - ELECTRIC HEATER ACCESSORY

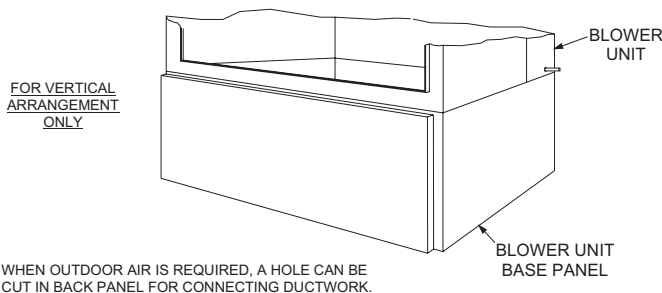


FIG. 6 - BASE ACCESSORY

**CAUTION:** Always puncture sealing caps and discs with a small drill bit before unbrazing to prevent the pressure in the line from blowing them off.

Before starting installation of the mains be sure the unit has not developed a leak in transit by drilling a small hole in the sealing discs. If pressure still exists, the circuit may be considered leak free. If pressure does not exist the coil should be leak tested.

**NOTE:** To minimize the possibility of system failure due to dirt and moisture, a filter-drier must be installed in the liquid line as close to the evaporator as possible. Filter-driers are not supplied with the evaporator blowers. They are supplied with the matching condensing sections.

If check valves are required, they must be purchased and installed in the field. The temperature required to make or break a brazed joint is sufficiently high to cause oxidation of the copper unless an inert atmosphere is provided.

**CAUTION:** Dry nitrogen should flow through the system at all times when heat is being applied and until the joint has cooled.

The liquid and suction connections must be piped outside the unit. Refer to the unit drawing for locations and the dimensions of these connections.

Before brazing the refrigerant lines to these connections, remove the short panel from the unit frame and slide it (along with the grommets) onto the refrigerant lines. After the brazed joints have cooled, slide the panel back into place and secure it to the unit frame.

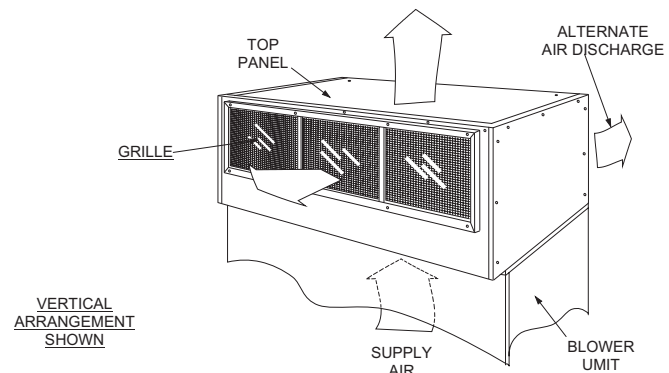


FIG. 5 - SUPPLY AIR PLENUM ACCESSORY

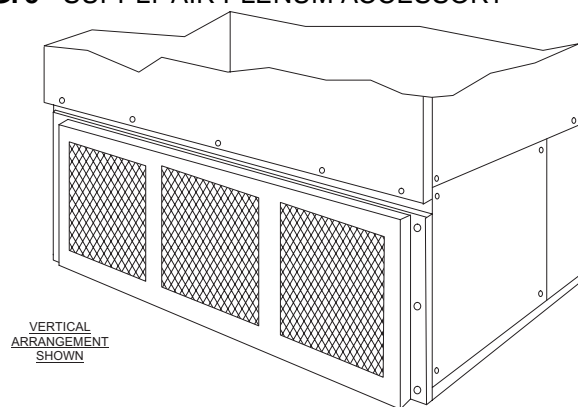


FIG. 7 - RETURN AIR GRILLE ACCESSORY

**NOTE:** These units can only be piped from one side of the unit.

### EXPANSION VALVE BULB

On KEU060 and 090 units, the expansion valve bulb must be fastened in a 4 o'clock position to the suction line outside the cabinet after the piping connections have been made.

On KEU120 units, fasten the expansion valve bulb on the suction header 8" below the top of the header, and adjacent to the coil.

Use the clamps provided with the valve to secure the bulb in position.

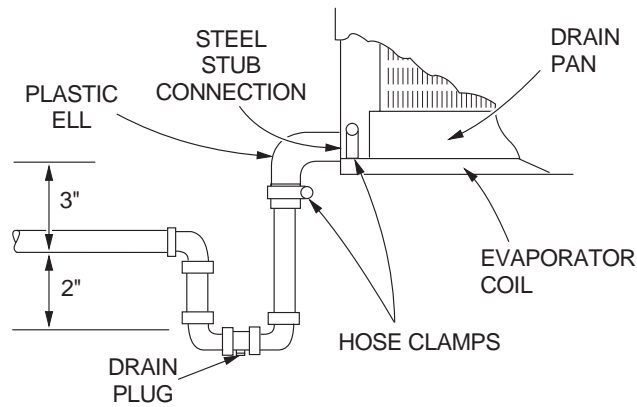
### DRAIN CONNECTION

The drain line must be trapped because the coil is located on the negative side of the supply air blower. It must be protected from freezing temperatures.

A 7/8" O.D. drain connection extends through right hand side of cabinet. Refer to Figure 8 for recommended drain piping.

The drain connection is located on the same side of the unit as the refrigerant connections. The line should be insulated where moisture dripping will be objectionable or cause damage to the area.

The 3" dimension must equal or exceed the negative static pressure developed by the supply air blower. If it does not, the condensate will not drain properly and may overflow the drain pan. The trap must be at least 2-1/2" deep to maintain a water seal under all operating conditions, especially during blower start-up.



**FIG. 8 - RECOMMENDED DRAIN PIPING**

NOTE: Refer to Figure 12 or 13 for minimum clearance requirements.

### SUPPLY AIR BLOWER ADJUSTMENT

The RPM of the supply air blower will depend on the required CFM, the unit accessories and the static resistances of both the supply and the return air duct system. With this information, the RPM for the supply air blower can be determined from the blower performance shown in Table 4.

Knowing the required blower RPM and the blower motor HP, the setting (turns open) for the supply air motor pulley can be determined from Table 3.

Each motor pulley has:

1. A threaded barrel with two flats (or notched recesses) 180 degrees apart.
2. A movable flange with one set screw.

After the movable flange has been rotated to the proper number of "turns open"; the set screw should be tightened against the flat on the barrel to lock the movable flange in place. If the pulley includes a locking collar, the locking collar must be loosened to adjust the setting of the movable flange.

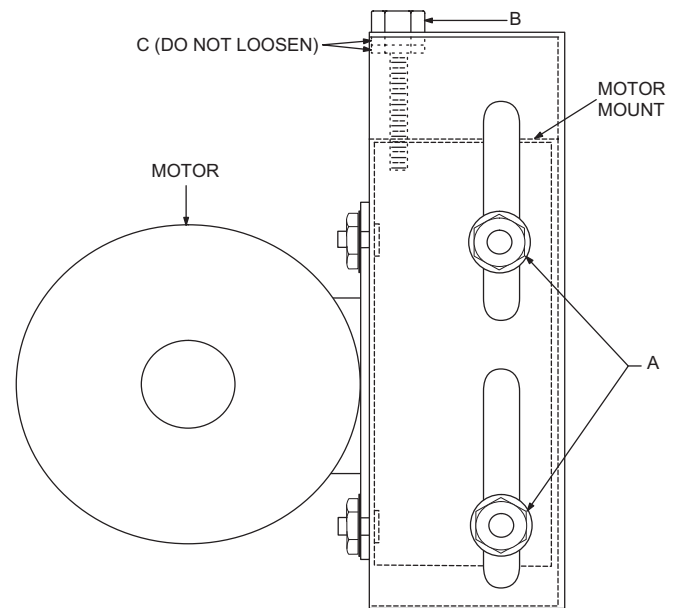
Note the following:

1. The supply air CFM must be within the limitations shown in Table 1.
2. All Pulleys can be adjusted in half turn increments.
3. The tension on the belt should be adjusted for a deflection of 3/16 of an inch per foot of belt span with an applied force

**TABLE 3 - SUPPLY AIR BLOWER MOTOR PULLEY ADJUSTMENT**

TURNS OPEN*	DRIVE RANGE (RPM)		
	KEU060 810-1110	KEU090 655-880	KEU120 700-950
5	810	655	700
4	870	700	750
3	930	745	800
2	990	790	850
1	1050	835	900
0	1110	880	950

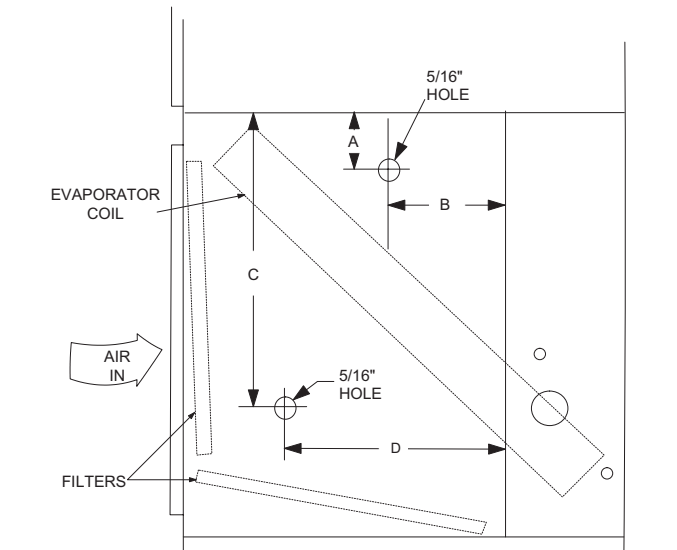
\* Pulleys can be adjusted in half-turn increments.



**FIG. 9 - TYPICAL MOTOR MOUNTING ASSEMBLY**

of 2 to 3 pounds. Moving the blower motor mounting plate makes this adjustment. Refer to Figure 9. Turning the adjustment bolt (B) moves the motor mounting plate up or down. Note - NEVER loosen the two nuts (C). Two hex nuts (A) have to be loosened to move the mounting plate and retighten after the mounting plate has been moved to the proper position.

4. All pulleys are factory aligned.
5. All supply air motor pulleys are factory set at 3 "turns open".

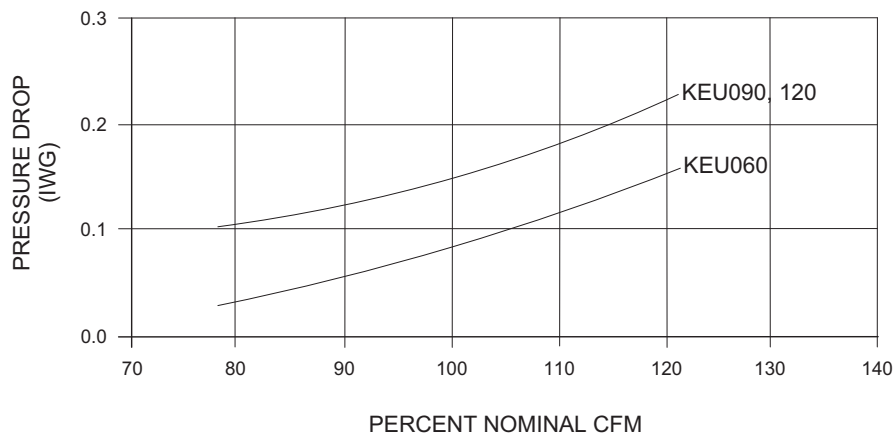


MODEL	DIMENSIONS (in.)			
	A	B	C	D
KEU060	9-1/2	2-1/4	19	10-1/4
KEU090	3	3	14	12
KEU120	3	3	14	12

NOTE: Shut down the refrigeration system before taking any test measurements to assure a dry evaporator coil.

**FIG. 10 - HOLE LOCATIONS (PRESSURE DROP READINGS)**





**FIG. 11 - PRESSURE DROP ACROSS A DRY EVAPORATOR COIL VS. SUPPLY AIR CFM**

After the supply air blower motor is operating, adjust the resistances in both the supply and the return duct systems to balance the air distribution throughout the conditioned space. The job specifications may require that this balancing be done by someone other than the equipment installer.

To check the supply air CFM after the initial balancing has been completed:

1. Drill two 5/16-inch holes in the side panel as shown in Figure 10.

2. Insert at least 8" of 1/4 inch tubing into each of these holes for sufficient penetration into the airflow on both sides of the evaporator coil.

*NOTE: The tubes must be inserted and held in a position perpendicular to the airflow so that velocity pressure will not affect the static pressure readings.*

3. Using an inclined manometer, determine the pressure drop across a dry evaporator coil. Since the moisture on an evaporator coil may vary greatly, measuring the pressure drop across a wet coil under field conditions would be

**TABLE 4 - SUPPLY AIR BLOWER PERFORMANCE<sup>1</sup>**

RPM	CFM														
	SP <sup>2</sup>	BHP <sup>3</sup>	KW	SP <sup>2</sup>	BHP <sup>3</sup>	KW	SP <sup>2</sup>	BHP <sup>3</sup>	KW	SP <sup>2</sup>	BHP <sup>3</sup>	KW	SP <sup>2</sup>	BHP <sup>3</sup>	KW
<b>060</b>															
	1600			1800			2000			2200			2400		
800	0.43	0.38	0.34	0.30	0.45	0.41	0.16	0.52	0.48	-	-	-	-	-	-
810	0.45	0.39	0.35	0.32	0.46	0.42	0.18	0.53	0.49	0.02	0.61	0.56	-	-	-
900	0.64	0.48	0.43	0.53	0.56	0.51	0.40	0.64	0.59	0.25	0.73	0.68	0.10	0.82	0.77
1000	0.87	0.58	0.53	0.77	0.67	0.63	0.65	0.76	0.71	0.51	0.86	0.81	0.37	0.97	0.90
1100	1.12	0.69	0.64	1.03	0.78	0.73	0.92	0.89	0.83	0.79	1.00	0.94	0.66	1.13	1.04
1110	1.15	0.70	0.65	1.06	0.79	0.74	0.95	0.90	0.84	0.82	1.02	0.95	0.69	1.16	1.08
1200	1.39	0.80	0.75	1.30	0.90	0.84	1.20	1.02	0.95	1.09	1.15	1.07	0.97	1.30	-
<b>090</b>															
	2400			2700			3000			3300			3600		
600	0.35	0.62	0.59	0.26	0.70	0.66	0.13	0.78	0.73	-	-	-	-	-	-
655	0.49	0.70	0.66	0.41	0.78	0.72	0.30	0.87	0.82	0.07	0.96	0.90	-	-	-
700	0.60	0.77	0.73	0.53	0.85	0.80	0.43	0.95	0.89	0.29	1.06	0.99	0.12	1.17	1.09
800	0.92	0.97	0.90	0.85	1.06	0.99	0.77	1.18	1.10	0.65	1.30	1.21	0.49	1.42	1.32
880	1.18	1.11	1.04	1.11	1.24	1.16	1.03	1.37	1.28	0.91	1.50	1.38	0.77	1.64	1.53
900	1.24	1.15	1.07	1.18	1.28	1.19	1.10	1.42	1.32	0.98	1.55	1.43	0.84	1.70	1.57
1000	1.58	1.35	1.26	1.53	1.48	1.38	1.46	1.63	1.48	1.37	1.81	1.65	1.24	2.02	1.85
<b>120</b>															
	3200			3600			4000			4400			4800		
700	0.49	1.01	0.94	0.34	1.17	1.09	0.14	1.33	1.24	-	-	-	-	-	-
800	0.84	1.25	1.16	0.71	1.42	1.32	0.53	1.60	1.48	0.30	1.80	1.64	-	-	-
900	1.18	1.48	1.38	1.06	1.70	1.57	0.91	1.92	1.75	0.70	2.18	1.99	0.43	2.45	2.24
950	1.37	1.61	1.50	1.26	1.86	1.71	1.11	2.12	1.95	0.91	2.39	2.18	0.65	2.67	2.44
1000	1.56	1.75	1.62	1.46	2.02	1.85	1.32	2.30	2.10	1.13	2.60	2.38	0.87	2.90	2.65

NOTE: Refer to Form 550.13-AD1 for blower performance curves.



RPM range for the standard, factory-mounted drive components.



Exceeds the BHP limitation of the standard factory mounted blower motor.

<sup>1</sup>Unit resistance is based on a wet evaporator coil and clean filters.

<sup>2</sup>Available static pressure in IWG to overcome the resistance of the duct system and any accessories added to the unit. Refer to the respective tables for the resistance of these accessories and for additional motor and drive data.

<sup>3</sup>Motors can be selected to operate into their service factor because they are located in the moving air stream, upstream of any heating device. Units with steam or hot water coils are the only exception. On these units, the BHP must not exceed the nominal HP rating of the motor.



**TABLE 5 - STATIC RESISTANCES FOR UNIT ACCESSORIES (IWG)**

Unit Model	Accessory		CFM				
			1600	1800	2000	2200	2400
060	Electric Heaters	10 KW	0.01	0.01	0.01	0.02	0.02
		16 KW	0.01	0.02	0.02	0.03	0.04
		26 KW	0.02	0.03	0.04	0.05	0.08
	Supply Air Plenum		0.03	0.04	0.05	0.07	0.10
	Return Air Grille		0.03	0.04	0.05	0.07	0.10
	Hot Water Coil		0.16	0.21	0.24	0.28	0.32
	Steam Coil		0.13	0.16	0.19	0.22	0.26
			2400	2700	3000	3300	3600
090	Electric Heaters	10 KW	0.01	0.01	0.01	0.02	0.02
		16 KW	0.01	0.02	0.02	0.03	0.04
		26 KW	0.03	0.04	0.05	0.06	0.07
		36 KW	0.05	0.07	0.08	0.10	0.11
	Supply Air Plenum		0.03	0.03	0.04	0.05	0.06
	Return Air Grille		0.02	0.03	0.04	0.05	0.06
	Hot Water Coil		0.11	0.14	0.17	0.20	0.23
Steam Coil		0.10	0.12	0.14	0.16	0.19	
			3200	3600	4000	4400	4800
120	Electric Heaters	10 KW	0.02	0.02	0.03	0.03	0.04
		16 KW	0.03	0.04	0.05	0.06	0.07
		26 KW	0.06	0.07	0.09	0.11	0.13
		36 KW	0.09	0.11	0.14	0.17	0.20
	Supply Air Plenum		0.05	0.06	0.07	0.08	0.10
	Return Air Grille		0.05	0.06	0.07	0.08	0.10
	Hot Water Coil		0.19	0.24	0.30	0.35	0.40
Steam Coil		0.16	0.19	0.23	0.27	0.31	

**TABLE 6 - BLOWER MOTOR AND DRIVE DATA**

MODELS	MOTOR HP	BLOWER (RPM)	ADJUSTABLE MOTOR PULLEY		FIXED BLOWER PULLEY		BELTS	
			PITCH DIA. (IN.)	BORE (IN.)	PITCH DIA. (IN.)	BORE (IN.)	DESIG-NATION	PITCH LENGTH (IN.)
060	3/4	810 - 1110	2.8 - 3.8	5/8	6.0	3/4	A32	33.3
090	1-1/2	655 - 880	2.8 - 3.8	7/8	7.5	1	A36	37.3
120	2	700 - 950	2.8 - 3.8	7/8	7.0	1	A36	37.3

NOTES: 1. All motors are 1750 RPM and have a 56 frame, inherent protection and permanently lubricated ball bearings. The 3/4 HP motor is split phase and has a resilient base and a 1.25 service factor. The 1-1/2 and 2 HP motors have a solid base and a 1.15 service factor.

2. Three-phase motors are be wired for a 460 volt power supply. Refer to the wiring diagram inside the motor terminal box when motor leads have to be reconnected for a 208 or 230 volt power supply.

inaccurate. To assure a dry coil, the refrigeration system should be de-activated while the test is being run.

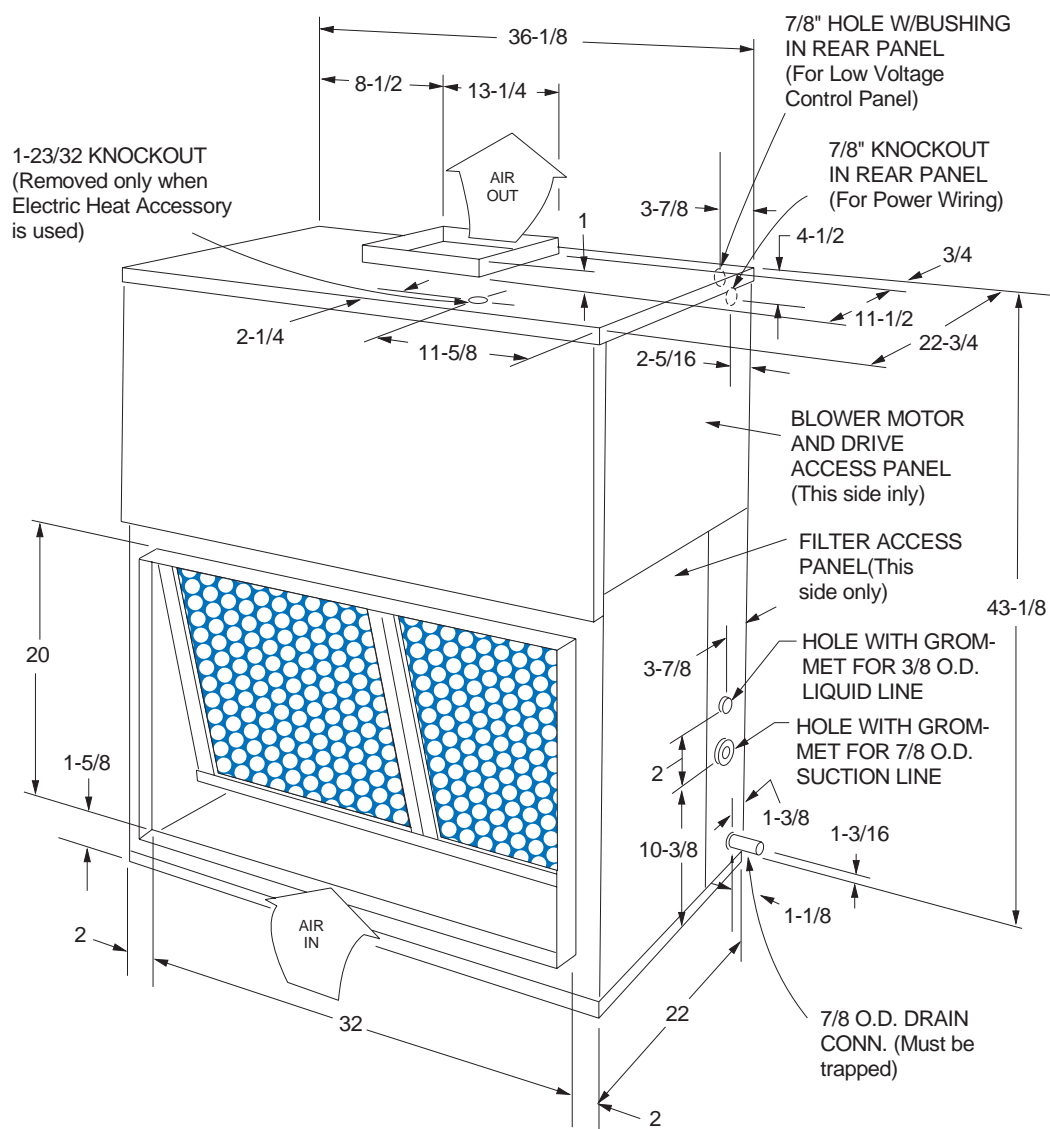
4. Knowing the pressure drop across a dry coil, the actual CFM through the unit can be determined from the curve in Figure 11.

If the CFM is above or below the specified value, the supply air motor pulley may have to be re-adjusted. After one hour

of operation, check the belt and pulleys for tightness and alignment.

**WARNING:** Failure to properly adjust the total system air quantity can result in extensive blower damage.

After readings have been obtained, remove the tubes and seal up the drilled holes in the side panel 5/16" dot plugs (P/N 029-13880) are available through normal parts ordering procedures.



ACCESSORIES

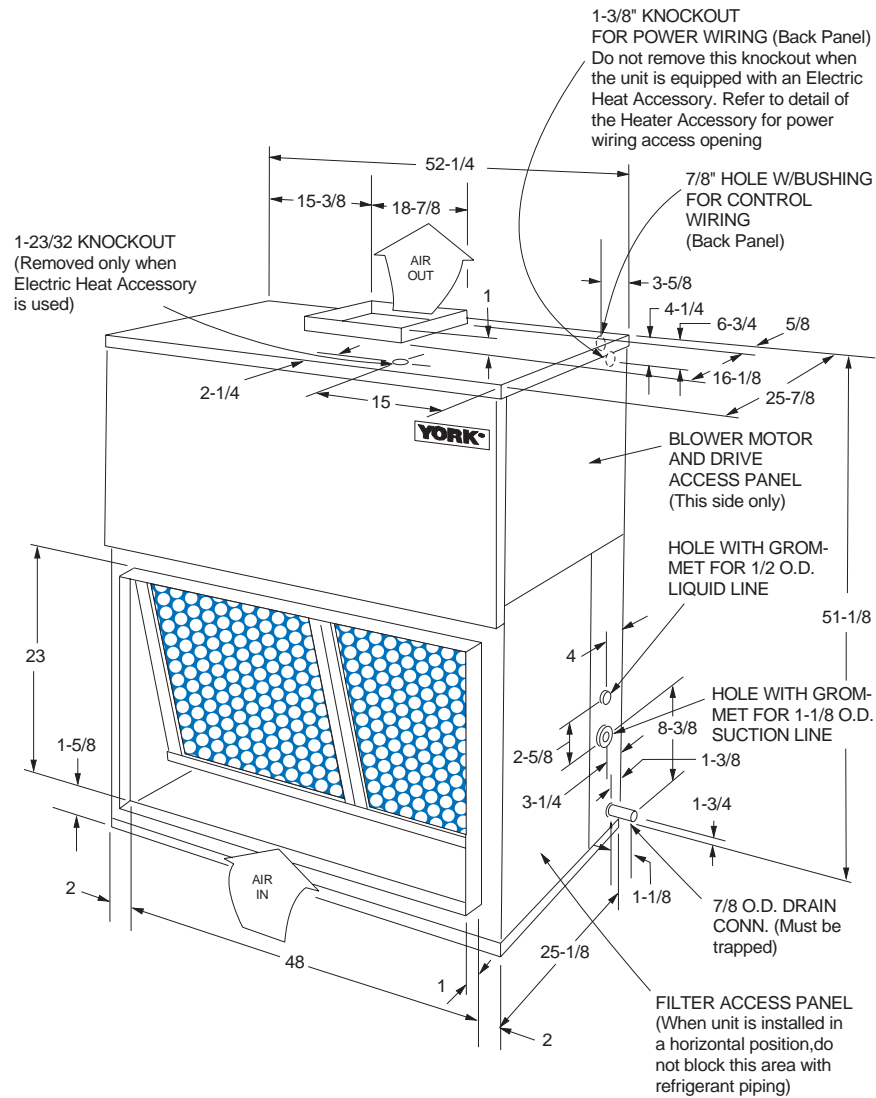
- ELECTRIC HEATER - Add 13" to unit height when used.
- SUPPLY AIR PLENUM - Add 24-1/4" to unit height when used.
- BASE - Add 20" to unit height when used.

All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.

MINIMUM CLEARANCES	
Side with RETURN AIR opening	24"
Side with SUPPLY AIR opening	24" <sup>1</sup>
Side with PIPING CONNECTIONS	36" <sup>2</sup>
Side opposite PIPING CONNECTIONS	12"
Side with access for both POWER & CONTROL WIRING	- <sup>3</sup>
Bottom	- <sup>4</sup>

- 1 Overall dimension of the unit will vary if an electric heater, a supply air plenum or a base is used.
- 2 This dimension is required for removal of the coil. Only 26" is required for normal service.
- 3 Although no clearance is required for service and operation, some clearance may be required for routing the power and control wiring.
- 4 Allow enough clearance to trap the condensate drain line.

FIG. 12 - UNIT DIMENSIONS & CLEARANCES (KEU060)



## ACCESSORIES

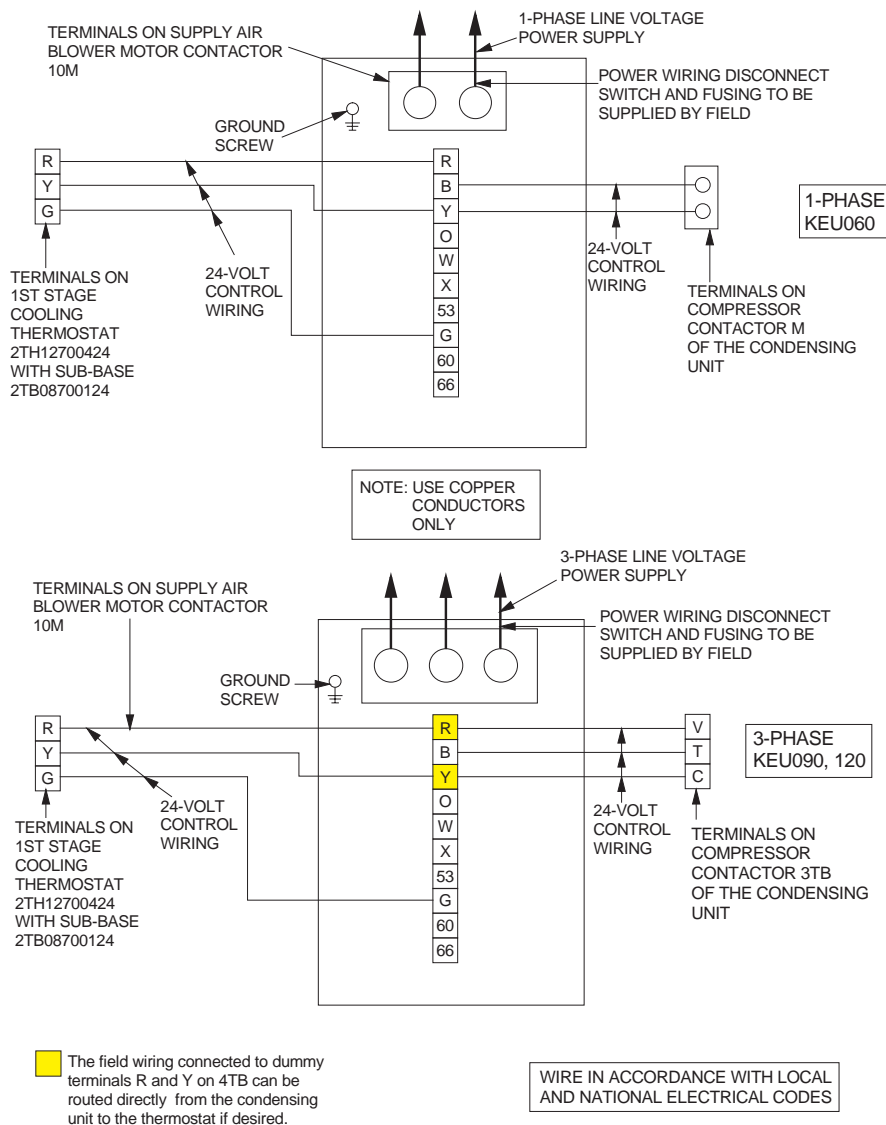
- ELECTRIC HEATER - Add 14-1/4" to unit height when used.
- SUPPLY AIR PLENUM - Add 27-1/2" to unit height when used.
- BASE - Add 20" to unit height when used.

All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.

MINIMUM CLEARANCES	
Side with RETURN AIR opening	24"
Side with SUPPLY AIR opening	24" <sup>1</sup>
Side with PIPING CONNECTIONS	52" <sup>2</sup>
Side opposite PIPING CONNECTIONS	12"
Side with access for both POWER & CONTROL WIRING	- <sup>3</sup>
Bottom	- <sup>4</sup>

- 1 Overall dimension of the unit will vary if an electric heater, a supply air plenum or a base is used.
- 2 This dimension is required for removal of the coil. Only 26" is required for normal service.
- 3 Although no clearance is required for service and operation, some clearance may be required for routing the power and control wiring.
- 4 Allow enough clearance to trap the condensate drain line.

**FIG. 13 - UNIT DIMENSIONS & CLEARANCES (KEU090 & 120)**



**FIG. 14 - TYPICAL FIELD WIRING  
POWER AND CONTROL WIRING**

Install electrical wiring in accordance with the latest National Electrical Code (NFPA Standard No. 70 and/or local regulations). The unit must be grounded in accordance with these codes.

#### POWER WIRING

Remove the knockout from the units rear panel (7/8" for KEU060, 1-3/8" for KEU090, and 120) for power wiring conduit through this opening. Connect the conduit to the required field-supplied fitting and the power wiring to blower motor contactor 10M in unit control box.

If the unit includes an electric heat accessory, route the power wires into heater control box in lieu of the unit. Refer to electric heat instruction 550.13-N10.1U for additional installation information.

#### CONTROL WIRING

Route the low voltage control wiring through the 7/8" hole (with bushing) in the units rear panel. Add a 1/2" conduit fitting to the 7/8" hole in the unit control box, route control wiring through this opening and connect them to the terminals on block 4TB.

Refer to Figures 12 and 13 for location of power and control wiring openings in rear panel of the unit.

Refer to Figure 14 for typical field wiring. Refer to Table 7 to size the disconnect switch, the power wiring and the fuses.

**NOTE:** Three phase motor rotations may be incorrect when unit is first started. Reverse phase (leads L1 and L2) at blower motor contactor to obtain correct rotation.

Blower unit Model KEU060 contains a low voltage control transformer (1T), which supplies the 24-volt control voltage for its operation and for the operation of the condensing unit.

**CAUTION:** To prevent possible interconnection between 24-volt circuits, the condensing unit being used with Model KEU060 blower unit must NOT contain its own 24-volt power supply.

**TABLE 7 - ELECTRICAL DATA - Cooling Only Unit**

Model	Motor Blower HP	Power Supply	Full Load Amps	Maximum Fuse Size <sup>1</sup> , Amps	Maximum Wire Length <sup>2</sup> , Feet
060	3/4	208/230-1-60	5.5	10	191
090	1-1/2	208-3-60	5.7	10	191
		230-3-60	5.2	10	233
		460-3-60	2.6	5	933
120	2	208-3-60	7.5	10	145
		230-3-60	6.8	10	178
		460-3-60	3.4	5	714

<sup>1</sup>Dual element, time delay fuses. <sup>2</sup>Based on three, 60°C, 14 AWG, insulated copper conductors in steel conduit and a 3% voltage drop.

**TABLE 8 - ELECTRICAL DATA - Units with Electric Heat**

Model Basic Unit <sup>1</sup>	Nominal Heater KW <sup>2</sup>	Power Supply Voltage <sup>3</sup>	Full Load Amps		Total Ampacity, Amps	Max. Fuse Size <sup>4</sup> , Amps	Min. Wire Size <sup>5</sup> , AWG	Max. Wire Length <sup>6</sup> , Ft.
			Heater	Blower Motor				
060	10	208	20.9	5.5	36	40	8	130
		230	24.0	5.5	39	40	8	134
	16	208	33.4	5.5	51	60	6	144
		230	38.5	5.5	57	60	4	228
	26	208	54.3	5.5	77	80	3	191
		230	62.6	5.5	87	90	2	240
090	10	208	20.9	5.7	36	40	8	130
		230	24.0	5.2	39	40	8	134
		460	12.0	2.6	20	20	12	208
	16	208	33.4	5.7	51	60	6	144
		230	38.5	5.2	57	60	4	228
		460	19.3	2.6	29	30	10	229
	26	208	54.3	5.7	77	80	3	191
		230	62.6	5.2	87	90	2	240
		460	31.3	2.6	44	45	6	373
	36	208	75.1	5.7	104	110	2	180
		230	86.7	5.2	117	125	1	223
		460	43.4	2.6	59	60	4	440
120	10	208	20.9	7.5	40	40	8	117
		230	24.0	6.8	42	45	6	196
		460	12.0	3.4	21	25	10	316
	16	208	33.4	7.5	55	60	6	134
		230	38.5	6.8	60	60	4	217
		460	19.3	3.4	30	30	10	221
	26	208	54.3	7.5	81	90	2	231
		230	62.6	6.8	90	90	2	232
		460	31.3	3.4	45	45	6	365
	36	208	75.1	10.6	107	110	2	174
		230	86.7	9.6	120	125	1	217
		460	43.4	4.8	660	30	4	433

<sup>1</sup>Units with an electric heat accessory will always be wired for a single power supply.

<sup>2</sup>Refer to the HEATING CAPACITY table for the actual KW and MBH ratings of each heater at the different voltages.

<sup>3</sup>All voltages are for 3-phase, 60 hertz operation.

<sup>4</sup>Inverse time circuit breakers may be used in lieu of dual element, time delay fuses.

<sup>5</sup>Based on three, insulated copper conductors in steel conduit

60°C wire when the total unit ampacity is below 100 amps.

75°C wires when the total unit ampacity is above 100 amps.

<sup>6</sup>Based on a 3% voltage drop.

## MAINTENANCE

### FILTERS

The filters must be cleaned or replaced as often as necessary to assure good airflow and filtering action.

Refer to the unit dimension detail (Figure 12 or 13) for the location of the filter access panel.

### EVAPORATOR COIL

Do not allow dirt to accumulate on the evaporator coil or other parts of the evaporator air circuit. Clean as often as necessary to assure good system performance. Use a brush, vacuum cleaner attachment or other suitable means.

### DRAIN PAN

The drain pan should be inspected regularly to assure proper drainage.

### LUBRICATION

The bearings for the blower shaft and the blower motor are permanently lubricated and should not require an additional lubrication.

### BELTS

Maintain belt tension to extend belt life. Replace when signs of failure begin to appear.









Heating and Air Conditioning

Unitary Products Group  
5005 York Drive, Norman, Oklahoma 73069  
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